

1. [11.0 Introduction to Stress, Lifestyle, and Health](#)
2. [11.1 What Is Stress?](#)
3. [11.2 Stressors](#)
4. [11.3 Stress and Illness](#)
5. [11.4 Regulation of Stress](#)
6. [11.5 The Pursuit of Happiness](#)

11.0 Introduction to Stress, Lifestyle, and Health

class="introduction"

Exams are a stressful,
but unavoidable,
element of college
life. (credit “left”:
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Few would deny that today's college students are under a lot of pressure. In addition to many usual stresses and strains incidental to the college experience (e.g., exams, term papers, and the dreaded freshman 15), students today are faced with increased college tuitions, burdensome debt, and difficulty finding employment after graduation. A significant population of non-traditional college students may face additional stressors, such as raising children or holding down a full-time job while working toward a degree.

Of course, life is filled with many additional challenges beyond those incurred in college or the workplace. We might have concerns with financial security, difficulties with friends or neighbors, family responsibilities, and we may not have enough time to do the things we want to do. Even minor hassles—losing things, traffic jams, and loss of internet service—all involve pressure and demands that can make life seem like a struggle and that can compromise our sense of well-being. That is, all can be stressful in some way.

Scientific interest in stress, including how we adapt and cope, has been longstanding in psychology; indeed, after nearly a century of research on the topic, much has been learned and many insights have been developed. This chapter examines stress and highlights our current understanding of the phenomenon, including its psychological and physiological natures, its causes and consequences, and the steps we can take to master stress rather than become its victim.

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11.1 What Is Stress?

By the end of this section, you will be able to:

- Differentiate between stimulus-based and response-based definitions of stress
- Define stress as a process
- Differentiate between good stress and bad stress
- Describe the early contributions of Walter Cannon and Hans Selye to the stress research field
- Understand the physiological basis of stress and describe the general adaptation syndrome

The term stress as it relates to the human condition first emerged in scientific literature in the 1930s, but it did not enter the popular vernacular until the 1970s (Lyon, 2012). Today, we often use the term loosely in describing a variety of unpleasant feeling states; for example, we often say we are stressed out when we feel frustrated, angry, conflicted, overwhelmed, or fatigued. Despite the widespread use of the term, stress is a fairly vague concept that is difficult to define with precision.

Researchers have had a difficult time agreeing on an acceptable definition of stress. Some have conceptualized stress as a demanding or threatening event or situation (e.g., a high-stress job, overcrowding, and long commutes to work). Such conceptualizations are known as stimulus-based definitions because they characterize stress as a stimulus that causes certain reactions. Stimulus-based definitions of stress are problematic, however, because they fail to recognize that people differ in how they view and react to challenging life events and situations. For example, a conscientious student who has studied diligently all semester would likely experience less stress during final exams week than would a less responsible, unprepared student.

Others have conceptualized stress in ways that emphasize the physiological responses that occur when faced with demanding or threatening situations (e.g., increased arousal). These conceptualizations are referred to as response-based definitions because they describe stress as a response to environmental conditions. For example, the endocrinologist Hans Selye, a famous stress researcher, once defined stress as the “response of the body to any demand, whether it is caused by, or results in, pleasant or unpleasant

conditions” (Selye, 1976, p. 74). Selye’s definition of stress is response-based in that it conceptualizes stress chiefly in terms of the body’s physiological reaction to any demand that is placed on it. Neither stimulus-based nor response-based definitions provide a complete definition of stress. Many of the physiological reactions that occur when faced with demanding situations (e.g., accelerated heart rate) can also occur in response to things that most people would not consider to be genuinely stressful, such as receiving unanticipated good news: an unexpected promotion or raise.

A useful way to conceptualize **stress** is to view it as a process whereby an individual perceives and responds to events that he appraises as overwhelming or threatening to his well-being (Lazarus & Folkman, 1984). A critical element of this definition is that it emphasizes the importance of how we appraise—that is, judge—demanding or threatening events (often referred to as **stressors**); these appraisals, in turn, influence our reactions to such events. Two kinds of appraisals of a stressor are especially important in this regard: primary and secondary appraisals. A **primary appraisal** involves judgment about the degree of potential harm or threat to well-being that a stressor might entail. A stressor would likely be appraised as a threat if one anticipates that it could lead to some kind of harm, loss, or other negative consequence; conversely, a stressor would likely be appraised as a challenge if one believes that it carries the potential for gain or personal growth. For example, an employee who is promoted to a leadership position would likely perceive the promotion as a much greater threat if she believed the promotion would lead to excessive work demands than if she viewed it as an opportunity to gain new skills and grow professionally. Similarly, a college student on the cusp of graduation may face the change as a threat or a challenge.

The perception of a threat triggers a **secondary appraisal**: judgment of the options available to cope with a stressor, as well as perceptions of how effective such options will be (Lyon, 2012). As you may recall from what you learned about self-efficacy, an individual’s belief in his ability to complete a task is important (Bandura, 1994). A threat tends to be viewed as less catastrophic if one believes something can be done about it (Lazarus & Folkman, 1984). Imagine that two middle-aged women, Robin and

Maria, perform breast self-examinations one morning and each woman notices a lump on the lower region of her left breast. Although both women view the breast lump as a potential threat (primary appraisal), their secondary appraisals differ considerably. In considering the breast lump, some of the thoughts racing through Robin's mind are, "Oh my God, I could have breast cancer! What if the cancer has spread to the rest of my body and I cannot recover? What if I have to go through chemotherapy? I've heard that experience is awful! What if I have to quit my job? My husband and I won't have enough money to pay the mortgage. Oh, this is just horrible...I can't deal with it!" On the other hand, Maria thinks, "Hmm, this may not be good. Although most times these things turn out to be benign, I need to have it checked out. If it turns out to be breast cancer, there are doctors who can take care of it because the medical technology today is quite advanced. I'll have a lot of different options, and I'll be just fine." Clearly, Robin and Maria have different outlooks on what might turn out to be a very serious situation: Robin seems to think that little could be done about it, whereas Maria believes that, worst case scenario, a number of options that are likely to be effective would be available. As such, Robin would clearly experience greater stress than would Maria.

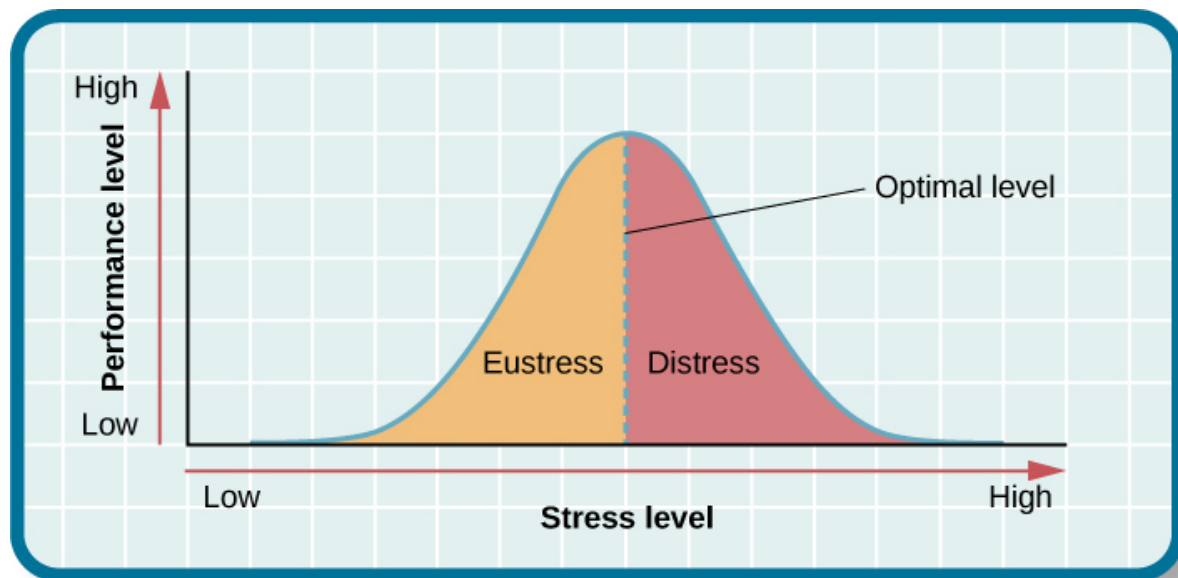
To be sure, some stressors are inherently more stressful than others in that they are more threatening and leave less potential for variation in cognitive appraisals (e.g., objective threats to one's health or safety). Nevertheless, appraisal will still play a role in augmenting or diminishing our reactions to such events (Everly & Lating, 2002).

If a person appraises an event as harmful and believes that the demands imposed by the event exceed the available resources to manage or adapt to it, the person will subjectively experience a state of stress. In contrast, if one does not appraise the same event as harmful or threatening, she is unlikely to experience stress. According to this definition, environmental events trigger stress reactions by the way they are interpreted and the meanings they are assigned. In short, stress is largely in the eye of the beholder: it's not so much what happens to you as it is how you respond (Selye, 1976).

GOOD STRESS?

Although stress carries a negative connotation, at times it may be of some benefit. Stress can motivate us to do things in our best interests, such as study for exams, visit the doctor regularly, exercise, and perform to the best of our ability at work. Indeed, Selye (1974) pointed out that not all stress is harmful. He argued that stress can sometimes be a positive, motivating force that can improve the quality of our lives. This kind of stress, which Selye called **eustress** (from the Greek *eu* = “good”), is a good kind of stress associated with positive feelings, optimal health, and performance. A moderate amount of stress can be beneficial in challenging situations. For example, athletes may be motivated and energized by pregame stress, and students may experience similar beneficial stress before a major exam. Indeed, research shows that moderate stress can enhance both immediate and delayed recall of educational material. Male participants in one study who memorized a scientific text passage showed improved memory of the passage immediately after exposure to a mild stressor as well as one day following exposure to the stressor (Hupbach & Fieman, 2012).

Increasing one’s level of stress will cause performance to change in a predictable way. As shown in [\[link\]](#), as stress increases, so do performance and general well-being (eustress); when stress levels reach an optimal level (the highest point of the curve), performance reaches its peak. A person at this stress level is colloquially at the top of his game, meaning he feels fully energized, focused, and can work with minimal effort and maximum efficiency. But when stress exceeds this optimal level, it is no longer a positive force—it becomes excessive and debilitating, or what Selye termed **distress** (from the Latin *dis* = “bad”). People who reach this level of stress feel burned out; they are fatigued, exhausted, and their performance begins to decline. If the stress remains excessive, health may begin to erode as well (Everly & Lating, 2002).



As the stress level increases from low to moderate, so does performance (eustress). At the optimal level (the peak of the curve), performance has reached its peak. If stress exceeds the optimal level, it will reach the distress region, where it will become excessive and debilitating, and performance will decline (Everly & Lating, 2002).

THE PREVALENCE OF STRESS

Stress is everywhere and it has been on the rise over the last several years. Each of us is acquainted with stress—some are more familiar than others. In many ways, stress feels like a load you just can't carry—a feeling you experience when, for example, you have to drive somewhere in a crippling blizzard, when you wake up late the morning of an important job interview, when you run out of money before the next pay period, and before taking an important exam for which you realize you are not fully prepared.

Stress is an experience that evokes a variety of responses, including those that are physiological (e.g., accelerated heart rate, headaches, or gastrointestinal problems), cognitive (e.g., difficulty concentrating or making decisions), and behavioral (e.g., drinking alcohol, smoking, or

taking actions directed at eliminating the cause of the stress). Although stress can be positive at times, it can have deleterious health implications, contributing to the onset and progression of a variety of physical illnesses and diseases (Cohen & Herbert, 1996).

The scientific study of how stress and other psychological factors impact health falls within the realm of **health psychology**, a subfield of psychology devoted to understanding the importance of psychological influences on health, illness, and how people respond when they become ill (Taylor, 1999). Health psychology emerged as a discipline in the 1970s, a time during which there was increasing awareness of the role behavioral and lifestyle factors play in the development of illnesses and diseases (Straub, 2007). In addition to studying the connection between stress and illness, health psychologists investigate issues such as why people make certain lifestyle choices (e.g., smoking or eating unhealthy food despite knowing the potential adverse health implications of such behaviors). Health psychologists also design and investigate the effectiveness of interventions aimed at changing unhealthy behaviors. Perhaps one of the more fundamental tasks of health psychologists is to identify which groups of people are especially at risk for negative health outcomes, based on psychological or behavioral factors. For example, measuring differences in stress levels among demographic groups and how these levels change over time can help identify populations who may have an increased risk for illness or disease.

Three national surveys in which several thousand individuals from different demographic groups completed a brief stress questionnaire; the surveys were administered in 1983, 2006, and 2009 (Cohen & Janicki-Deverts, 2012). All three surveys demonstrated higher stress in women than in men. Unemployed individuals reported high levels of stress in all three surveys, as did those with less education and income; retired persons reported the lowest stress levels. However, from 2006 to 2009 the greatest increase in stress levels occurred among men, Whites, people aged 45–64, college graduates, and those with full-time employment. One interpretation of these findings is that concerns surrounding the 2008–2009 economic downturn (e.g., threat of or actual job loss and substantial loss of retirement savings)

may have been especially stressful to White, college-educated, employed men with limited time remaining in their working careers.

EARLY CONTRIBUTIONS TO THE STUDY OF STRESS

As previously stated, scientific interest in stress goes back nearly a century. One of the early pioneers in the study of stress was Walter Cannon, an eminent American physiologist at Harvard Medical School . In the early part of the 20th century, Cannon was the first to identify the body's physiological reactions to stress.



Harvard physiologist
Walter Cannon first
articulated and named
the fight-or-flight
response, the nervous
system's sympathetic
response to a significant
stressor.

Cannon and the Fight-or-Flight Response

Imagine that you are hiking in the beautiful mountains of Colorado on a warm and sunny spring day. At one point during your hike, a large, frightening-looking black bear appears from behind a stand of trees and sits about 50 yards from you. The bear notices you, sits up, and begins to lumber in your direction. In addition to thinking, “This is definitely not good,” a constellation of physiological reactions begins to take place inside you. Prompted by a deluge of epinephrine (adrenaline) and norepinephrine (noradrenaline) from your adrenal glands, your pupils begin to dilate. Your heart starts to pound and speeds up, you begin to breathe heavily and perspire, you get butterflies in your stomach, and your muscles become tense, preparing you to take some kind of direct action. Cannon proposed that this reaction, which he called the **fight-or-flight response**, occurs when a person experiences very strong emotions—especially those associated with a perceived threat (Cannon, 1932). During the fight-or-flight response, the body is rapidly aroused by activation of both the sympathetic nervous system and the endocrine system ([\[link\]](#)). This arousal helps prepare the person to either fight or flee from a perceived threat.

According to Cannon, the fight-or-flight response is a built-in mechanism that assists in maintaining homeostasis—an internal environment in which physiological variables such as blood pressure, respiration, digestion, and temperature are stabilized at levels optimal for survival. Thus, Cannon viewed the fight-or-flight response as adaptive because it enables us to adjust internally and externally to changes in our surroundings, which is helpful in species survival.

Selye and the General Adaptation Syndrome

Another important early contributor to the stress field was Hans Selye, mentioned earlier. He would eventually become one of the world’s foremost experts in the study of stress. As a young assistant in the biochemistry

department at McGill University in the 1930s, Selye was engaged in research involving sex hormones in rats. Although he was unable to find an answer for what he was initially researching, he incidentally discovered that when exposed to prolonged negative stimulation (stressors)—such as extreme cold, surgical injury, excessive muscular exercise, and shock—the rats showed signs of adrenal enlargement, thymus and lymph node shrinkage, and stomach ulceration. Selye realized that these responses were triggered by a coordinated series of physiological reactions that unfold over time during continued exposure to a stressor. These physiological reactions were nonspecific, which means that regardless of the type of stressor, the same pattern of reactions would occur. What Selye discovered was the **general adaptation syndrome**, the body's nonspecific physiological response to stress.

The general adaptation syndrome consists of three stages: (1) alarm reaction, (2) stage of resistance, and (3) stage of exhaustion (Selye, 1936; 1976). **Alarm reaction** describes the body's immediate reaction upon facing a threatening situation or emergency, and it is roughly analogous to the fight-or-flight response described by Cannon. During an alarm reaction, you are alerted to a stressor, and your body alarms you with a cascade of physiological reactions that provide you with the energy to manage the situation. A person who wakes up in the middle of the night to discover her house is on fire, for example, is experiencing an alarm reaction.

If exposure to a stressor is prolonged, the organism will enter the **stage of resistance**. During this stage, the initial shock of alarm reaction has worn off and the body has adapted to the stressor. Nevertheless, the body also remains on alert and is prepared to respond as it did during the alarm reaction, although with less intensity. For example, suppose a child who went missing is still missing 72 hours later. Although the parents would obviously remain extremely disturbed, the magnitude of physiological reactions would likely have diminished over the 72 intervening hours due to some adaptation to this event.

If exposure to a stressor continues over a longer period of time, the **stage of exhaustion** ensues. At this stage, the person is no longer able to adapt to the stressor: the body's ability to resist becomes depleted as physical wear takes

its toll on the body's tissues and organs. As a result, illness, disease, and other permanent damage to the body—even death—may occur. If a missing child still remained missing after three months, the long-term stress associated with this situation may cause a parent to literally faint with exhaustion at some point or even to develop a serious and irreversible illness.

In short, Selye's general adaptation syndrome suggests that stressors tax the body via a three-phase process—an initial jolt, subsequent readjustment, and a later depletion of all physical resources—that ultimately lays the groundwork for serious health problems and even death. It should be pointed out, however, that this model is a response-based conceptualization of stress, focusing exclusively on the body's physical responses while largely ignoring psychological factors such as appraisal and interpretation of threats. Nevertheless, Selye's model has had an enormous impact on the field of stress because it offers a general explanation for how stress can lead to physical damage and, thus, disease. As we shall discuss later, prolonged or repeated stress has been implicated in development of a number of disorders such as hypertension and coronary artery disease.

Summary

Stress is a process whereby an individual perceives and responds to events appraised as overwhelming or threatening to one's well-being. The scientific study of how stress and emotional factors impact health and well-being is called health psychology, a field devoted to studying the general impact of psychological factors on health. The body's primary physiological response during stress, the fight-or-flight response, was first identified in the early 20th century by Walter Cannon. The fight-or-flight response involves the coordinated activity of both the sympathetic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis. Hans Selye, a noted endocrinologist, referred to these physiological reactions to stress as part of general adaptation syndrome, which occurs in three stages: alarm reaction (fight-or-flight reactions begin), resistance (the body begins to adapt to continuing stress), and exhaustion (adaptive energy is depleted, and stress begins to take a physical toll).

Review Questions

Exercise:

Problem:

Negative effects of stress are most likely to be experienced when an event is perceived as _____.

- A. negative, but it is likely to affect one's friends rather than oneself
- B. challenging
- C. confusing
- D. threatening, and no clear options for dealing with it are apparent

Solution:

D

Exercise:

Problem:

Between 2006 and 2009, the greatest increases in stress levels were found to occur among _____.

- A. Blacks
- B. those aged 45–64
- C. the unemployed
- D. those without college degrees

Solution:

B

Exercise:

Problem:

At which stage of Selye's general adaptation syndrome is a person especially vulnerable to illness?

- A. exhaustion
- B. alarm reaction
- C. fight-or-flight
- D. resistance

Solution:

A

Exercise:**Problem:**

During an encounter judged as stressful, cortisol is released by the _____.

- A. sympathetic nervous system
- B. hypothalamus
- C. pituitary gland
- D. adrenal glands

Solution:

D

Critical Thinking Questions**Exercise:**

Problem:

Provide an example (other than the one described earlier) of a situation or event that could be appraised as either threatening or challenging.

Solution:

Answers will vary. One example is divorce. People may perceive a divorce as a threat if they believe it will result in loneliness, change of lifestyle (due to loss of additional income), or humiliation in the eyes of their family. However, divorce may be perceived as a challenge if they view it as an opportunity to find somebody more compatible, and if they consider the process of finding a new partner a pleasant one, perhaps involving mystery and excitement.

Exercise:**Problem:**

Provide an example of a stressful situation that may cause a person to become seriously ill. How would Selye's general adaptation syndrome explain this occurrence?

Solution:

Answers will vary. One example is when somebody's spouse dies or is unexpectedly diagnosed with a fatal disease. In both cases, the stress experienced by the surviving spouse would be intense, continuous, and—according to the general adaptation syndrome—would eventually increase vulnerability to illness or disease (exhaustion stage).

Glossary**alarm reaction**

first stage of the general adaptation syndrome; characterized as the body's immediate physiological reaction to a threatening situation or some other emergency; analogous to the fight-or-flight response

cortisol

stress hormone released by the adrenal glands when encountering a stressor; helps to provide a boost of energy, thereby preparing the individual to take action

distress

bad form of stress; usually high in intensity; often leads to exhaustion, fatigue, feeling burned out; associated with erosions in performance and health

eustress

good form of stress; low to moderate in intensity; associated with positive feelings, as well as optimal health and performance

fight-or-flight response

set of physiological reactions (increases in blood pressure, heart rate, respiration rate, and sweat) that occur when an individual encounters a perceived threat; these reactions are produced by activation of the sympathetic nervous system and the endocrine system

general adaptation syndrome

Hans Selye's three-stage model of the body's physiological reactions to stress and the process of stress adaptation: alarm reaction, stage of resistance, and stage of exhaustion

health psychology

subfield of psychology devoted to studying psychological influences on health, illness, and how people respond when they become ill

hypothalamic-pituitary-adrenal (HPA) axis

set of structures found in both the limbic system (hypothalamus) and the endocrine system (pituitary gland and adrenal glands) that regulate many of the body's physiological reactions to stress through the release of hormones

primary appraisal

judgment about the degree of potential harm or threat to well-being that a stressor might entail

secondary appraisal

judgment of options available to cope with a stressor and their potential effectiveness

stage of exhaustion

third stage of the general adaptation syndrome; the body's ability to resist stress becomes depleted; illness, disease, and even death may occur

stage of resistance

second stage of the general adaptation syndrome; the body adapts to a stressor for a period of time

stress

process whereby an individual perceives and responds to events that one appraises as overwhelming or threatening to one's well-being

stressors

environmental events that may be judged as threatening or demanding; stimuli that initiate the stress process

11.2 Stressors

By the end of this section, you will be able to:

- Describe different types of possible stressors
- Explain the importance of life changes as potential stressors
- Describe the Social Readjustment Rating Scale
- Understand the concepts of job strain and job burnout

For an individual to experience stress, he must first encounter a potential stressor. In general, stressors can be placed into one of two broad categories: chronic and acute. Chronic stressors include events that persist over an extended period of time, such as caring for a parent with dementia, long-term unemployment, or imprisonment. Acute stressors involve brief focal events that sometimes continue to be experienced as overwhelming well after the event has ended, such as falling on an icy sidewalk and breaking your leg (Cohen, Janicki-Deverts, & Miller, 2007). Whether chronic or acute, potential stressors come in many shapes and sizes. They can include major traumatic events, significant life changes, daily hassles, as well as other situations in which a person is regularly exposed to threat, challenge, or danger.

TRAUMATIC EVENTS

Some stressors involve traumatic events or situations in which a person is exposed to actual or threatened death or serious injury. Stressors in this category include exposure to military combat, threatened or actual physical assaults (e.g., physical attacks, sexual assault, robbery, childhood abuse), terrorist attacks, natural disasters (e.g., earthquakes, floods, hurricanes), and automobile accidents. Men, non-Whites, and individuals in lower socioeconomic status (SES) groups report experiencing a greater number of traumatic events than do women, Whites, and individuals in higher SES groups (Hatch & Dohrenwend, 2007). Some individuals who are exposed to stressors of extreme magnitude develop post-traumatic stress disorder (PTSD): a chronic stress reaction characterized by experiences and behaviors that may include intrusive and painful memories of the stressor event, jumpiness, persistent negative emotional states, detachment from

others, angry outbursts, and avoidance of reminders of the event (American Psychiatric Association [APA], 2013).

LIFE CHANGES

Most stressors that we encounter are not nearly as intense as the ones described above. Many potential stressors we face involve events or situations that require us to make changes in our ongoing lives and require time as we adjust to those changes. Examples include death of a close family member, marriage, divorce, and moving.

In the 1960s, psychiatrists Thomas Holmes and Richard Rahe wanted to examine the link between life stressors and physical illness, based on the hypothesis that life events requiring significant changes in a person's normal life routines are stressful, whether these events are desirable or undesirable. They developed the **Social Readjustment Rating Scale (SRRS)**, consisting of 43 life events that require varying degrees of personal readjustment (Holmes & Rahe, 1967). Many life events that most people would consider pleasant (e.g., holidays, retirement, marriage) are among those listed on the SRRS; these are examples of eustress. Holmes and Rahe also proposed that life events can add up over time, and that experiencing a cluster of stressful events increases one's risk of developing physical illnesses.

In developing their scale, Holmes and Rahe asked 394 participants to provide a numerical estimate for each of the 43 items; each estimate corresponded to how much readjustment participants felt each event would require. These estimates resulted in mean value scores for each event—often called life change units (LCUs) (Rahe, McKeen, & Arthur, 1967). The numerical scores ranged from 11 to 100, representing the perceived magnitude of life change each event entails. Death of a spouse ranked highest on the scale with 100 LCUs, and divorce ranked second highest with 73 LCUs. In addition, personal injury or illness, marriage, and job termination also ranked highly on the scale with 53, 50, and 47 LCUs, respectively. Conversely, change in residence (20 LCUs), change in eating habits (15 LCUs), and vacation (13 LCUs) ranked low on the scale ([\[link\]](#)). Minor violations of the law ranked the lowest with 11 LCUs. To complete

the scale, participants checked yes for events experienced within the last 12 months. LCUs for each checked item are totaled for a score quantifying the amount of life change. Agreement on the amount of adjustment required by the various life events on the SRRS is highly consistent, even cross-culturally (Holmes & Masuda, 1974).

Life event	Life change units
Death of a close family member	63
Personal injury or illness	53
Dismissal from work	47
Change in financial state	38
Change to different line of work	36
Outstanding personal achievement	28
Beginning or ending school	26
Change in living conditions	25
Change in working hours or conditions	20
Change in residence	20
Change in schools	20
Change in social activities	18

Life event	Life change units
Change in sleeping habits	16
Change in eating habits	15
Minor violation of the law	11

Some Stressors on the Social Readjustment Rating Scale (Holmes & Rahe, 1967)

Extensive research has demonstrated that accumulating a high number of life change units within a brief period of time (one or two years) is related to a wide range of physical illnesses (even accidents and athletic injuries) and mental health problems (Monat & Lazarus, 1991; Scully, Tosi, & Banning, 2000). In an early demonstration, researchers obtained LCU scores for U.S. and Norwegian Navy personnel who were about to embark on a six-month voyage. A later examination of medical records revealed positive (but small) correlations between LCU scores prior to the voyage and subsequent illness symptoms during the ensuing six-month journey (Rahe, 1974). In addition, people tend to experience more physical symptoms, such as backache, upset stomach, diarrhea, and acne, on specific days in which self-reported LCU values are considerably higher than normal, such as the day of a family member's wedding (Holmes & Holmes, 1970).

The Social Readjustment Rating Scale (SRRS) provides researchers a simple, easy-to-administer way of assessing the amount of stress in people's lives, and it has been used in hundreds of studies (Thoits, 2010). Despite its widespread use, the scale has been subject to criticism. First, many of the items on the SRRS are vague; for example, death of a close friend could involve the death of a long-absent childhood friend that requires little social readjustment (Dohrenwend, 2006). In addition, some have challenged its assumption that undesirable life events are no more stressful than desirable ones (Derogatis & Coons, 1993). However, most of the available evidence suggests that, at least as far as mental health is concerned, undesirable or negative events are more strongly associated with poor outcomes (such as

depression) than are desirable, positive events (Hatch & Dohrenwend, 2007). Perhaps the most serious criticism is that the scale does not take into consideration respondents' appraisals of the life events it contains. As you recall, appraisal of a stressor is a key element in the conceptualization and overall experience of stress. Being fired from work may be devastating to some but a welcome opportunity to obtain a better job for others. The SRRS remains one of the most well-known instruments in the study of stress, and it is a useful tool for identifying potential stress-related health outcomes (Scully et al., 2000).

Note:

Correlational Research

The Holmes and Rahe Social Readjustment Rating Scale (SRRS) uses the correlational research method to identify the connection between stress and health. That is, respondents' LCU scores are correlated with the number or frequency of self-reported symptoms indicating health problems. These correlations are typically positive—as LCU scores increase, the number of symptoms increase. Consider all the thousands of studies that have used this scale to correlate stress and illness symptoms: If you were to assign an average correlation coefficient to this body of research, what would be your best guess? How strong do you think the correlation coefficient would be? Why can't the SRRS show a causal relationship between stress and illness? If it were possible to show causation, do you think stress causes illness or illness causes stress?

HASSLES

Potential stressors do not always involve major life events. **Daily hassles**—the minor irritations and annoyances that are part of our everyday lives (e.g., rush hour traffic, lost keys, obnoxious coworkers, inclement weather, arguments with friends or family)—can build on one another and leave us just as stressed as life change events (Kanner, Coyne, Schaefer, & Lazarus, 1981).

Researchers have demonstrated that the frequency of daily hassles is actually a better predictor of both physical and psychological health than are life change units. In a well-known study of San Francisco residents, the frequency of daily hassles was found to be more strongly associated with physical health problems than were life change events (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). In addition, daily minor hassles, especially interpersonal conflicts, often lead to negative and distressed mood states (Bolger, DeLongis, Kessler, & Schilling, 1989). Cyber hassles that occur on social media may represent a new source of stress. In one investigation, undergraduates who, over a 10-week period, reported greater Facebook-induced stress (e.g., guilt or discomfort over rejecting friend requests and anger or sadness over being unfriended by another) experienced increased rates of upper respiratory infections, especially if they had larger social networks (Campisi et al., 2012). Clearly, daily hassles can add up and take a toll on us both emotionally and physically.

OTHER STRESSORS

Stressors can include situations in which one is frequently exposed to challenging and unpleasant events, such as difficult, demanding, or unsafe working conditions. Although most jobs and occupations can at times be demanding, some are clearly more stressful than others. For example, most people would likely agree that a firefighter's work is inherently more stressful than that of a florist. Equally likely, most would agree that jobs containing various unpleasant elements, such as those requiring exposure to loud noise (heavy equipment operator), constant harassment and threats of physical violence (prison guard), perpetual frustration (bus driver in a major city), or those mandating that an employee work alternating day and night shifts (hotel desk clerk), are much more demanding—and thus, more stressful—than those that do not contain such elements. [\[link\]](#) lists several occupations and some of the specific stressors associated with those occupations (Sulsky & Smith, 2005).

Occupation	Stressors Specific to Occupation (Sulsky & Smith, 2005)
Police officer	physical dangers, excessive paperwork, red tape, dealing with court system, coworker and supervisor conflict, lack of support from the public
Firefighter	uncertainty over whether a serious fire or hazard awaits after an alarm
Social worker	little positive feedback from jobs or from the public, unsafe work environments, frustration in dealing with bureaucracy, excessive paperwork, sense of personal responsibility for clients, work overload
Teacher	Excessive paperwork, lack of adequate supplies or facilities, work overload, lack of positive feedback, vandalism, threat of physical violence
Nurse	Work overload, heavy physical work, patient concerns (dealing with death and medical concerns), interpersonal problems with other medical staff (especially physicians)
Emergency medical worker	Unpredictable and extreme nature of the job, inexperience
Air traffic controller	Little control over potential crisis situations and workload, fear of causing an accident, peak traffic situations, general work environment
Clerical and secretarial work	Little control over job mobility, unsupportive supervisors, work overload, lack of perceived control

Occupation	Stressors Specific to Occupation (Sulsky & Smith, 2005)
Managerial work	Work overload, conflict and ambiguity in defining the managerial role, difficult work relationships

Occupations and Their Related Stressors

Although the specific stressors for these occupations are diverse, they seem to share two common denominators: heavy workload and uncertainty about and lack of control over certain aspects of a job. Both of these factors contribute to **job strain**, a work situation that combines excessive job demands and workload with little discretion in decision making or job control (Karasek & Theorell, 1990). Clearly, many occupations other than the ones listed in [\[link\]](#) involve at least a moderate amount of job strain in that they often involve heavy workloads and little job control (e.g., inability to decide when to take breaks). Such jobs are often low-status and include those of factory workers, postal clerks, supermarket cashiers, taxi drivers, and short-order cooks. Job strain can have adverse consequences on both physical and mental health; it has been shown to be associated with increased risk of hypertension (Schnall & Landsbergis, 1994), heart attacks (Theorell et al., 1998), recurrence of heart disease after a first heart attack (Aboa-Éboulé et al., 2007), significant weight loss or gain (Kivimäki et al., 2006), and major depressive disorder (Stansfeld, Shipley, Head, & Fuhrer, 2012). A longitudinal study of over 10,000 British civil servants reported that workers under 50 years old who earlier had reported high job strain were 68% more likely to later develop heart disease than were those workers under 50 years old who reported little job strain (Chandola et al., 2008).

Some people who are exposed to chronically stressful work conditions can experience **job burnout**, which is a general sense of emotional exhaustion and cynicism in relation to one's job (Maslach & Jackson, 1981). Job burnout occurs frequently among those in human service jobs (e.g., social workers, teachers, therapists, and police officers). Job burnout consists of three dimensions. The first dimension is exhaustion—a sense that one's emotional resources are drained or that one is at the end of her rope and has

nothing more to give at a psychological level. Second, job burnout is characterized by depersonalization: a sense of emotional detachment between the worker and the recipients of his services, often resulting in callous, cynical, or indifferent attitudes toward these individuals. Third, job burnout is characterized by diminished personal accomplishment, which is the tendency to evaluate one's work negatively by, for example, experiencing dissatisfaction with one's job-related accomplishments or feeling as though one has categorically failed to influence others' lives through one's work.

Job strain appears to be one of the greatest risk factors leading to job burnout, which is most commonly observed in workers who are older (ages 55–64), unmarried, and whose jobs involve manual labor. Heavy alcohol consumption, physical inactivity, being overweight, and having a physical or lifetime mental disorder are also associated with job burnout (Ahola, et al., 2006). In addition, depression often co-occurs with job burnout. One large-scale study of over 3,000 Finnish employees reported that half of the participants with severe job burnout had some form of depressive disorder (Ahola et al., 2005). Job burnout is often precipitated by feelings of having invested considerable energy, effort, and time into one's work while receiving little in return (e.g., little respect or support from others or low pay) (Tatris, Peeters, Le Blanc, Schreurs, & Schaufeli, 2001).

As an illustration, consider CharlieAnn, a nursing assistant who worked in a nursing home. CharlieAnn worked long hours for little pay in a difficult facility. Her supervisor was domineering, unpleasant, and unsupportive; he was disrespectful of CharlieAnn's personal time, frequently informing her at the last minute she must work several additional hours after her shift ended or that she must report to work on weekends. CharlieAnn had very little autonomy at her job. She had little say in her day-to-day duties and how to perform them, and she was not permitted to take breaks unless her supervisor explicitly told her that she could. CharlieAnn did not feel as though her hard work was appreciated, either by supervisory staff or by the residents of the home. She was very unhappy over her low pay, and she felt that many of the residents treated her disrespectfully.

After several years, CharlieAnn began to hate her job. She dreaded going to work in the morning, and she gradually developed a callous, hostile attitude toward many of the residents. Eventually, she began to feel as though she could no longer help the nursing home residents. CharlieAnn's absenteeism from work increased, and one day she decided that she had had enough and quit. She now has a job in sales, vowing never to work in nursing again.

Finally, our close relationships with friends and family—particularly the negative aspects of these relationships—can be a potent source of stress. Negative aspects of close relationships can include adverse exchanges and conflicts, lack of emotional support or confiding, and lack of reciprocity. All of these can be overwhelming, threatening to the relationship, and thus stressful. Such stressors can take a toll both emotionally and physically. A longitudinal investigation of over 9,000 British civil servants found that those who at one point had reported the highest levels of negative interactions in their closest relationship were 34% more likely to experience serious heart problems (fatal or nonfatal heart attacks) over a 13–15 year period, compared to those who experienced the lowest levels of negative interaction (De Vogli, Chandola & Marmot, 2007).

Summary

Stressors can be chronic (long term) or acute (short term), and can include traumatic events, significant life changes, daily hassles, and situations in which people are frequently exposed to challenging and unpleasant events. Many potential stressors include events or situations that require us to make changes in our lives, such as a divorce or moving to a new residence. Thomas Holmes and Richard Rahe developed the Social Readjustment Rating Scale (SRRS) to measure stress by assigning a number of life change units to life events that typically require some adjustment, including positive events. Although the SRRS has been criticized on a number of grounds, extensive research has shown that the accumulation of many LCUs is associated with increased risk of illness. Many potential stressors also include daily hassles, which are minor irritations and annoyances that can build up over time. In addition, jobs that are especially demanding, offer little control over one's working environment, or involve unfavorable

working conditions can lead to job strain, thereby setting the stage for job burnout.

Review Questions

Exercise:

Problem:

According to the Holmes and Rahe scale, which life event requires the greatest amount of readjustment?

- A. marriage
- B. personal illness
- C. divorce
- D. death of spouse

Solution:

D

Exercise:

Problem:

While waiting to pay for his weekly groceries at the supermarket, Paul had to wait about 20 minutes in a long line at the checkout because only one cashier was on duty. When he was finally ready to pay, his debit card was declined because he did not have enough money left in his checking account. Because he had left his credit cards at home, he had to place the groceries back into the cart and head home to retrieve a credit card. While driving back to his home, traffic was backed up two miles due to an accident. These events that Paul had to endure are best characterized as _____.

- A. chronic stressors
- B. acute stressors
- C. daily hassles

D. readjustment occurrences

Solution:

C

Exercise:

Problem:

What is one of the major criticisms of the Social Readjustment Rating Scale?

- A. It has too few items.
 - B. It was developed using only people from the New England region of the United States.
 - C. It does not take into consideration how a person appraises an event.
 - D. None of the items included are positive.
-

Solution:

C

Exercise:

Problem: Which of the following is not a dimension of job burnout?

- A. depersonalization
 - B. hostility
 - C. exhaustion
 - D. diminished personal accomplishment
-

Solution:

B

Critical Thinking Questions

Exercise:

Problem:

Review the items on the Social Readjustment Rating Scale. Select one of the items and discuss how it might bring about distress and eustress.

Solution:

Answers will vary. For example, many people look forward to celebrating the Christmas holiday, but it can be stressful in that it requires some degree of readjustment. Getting together with family may bring eustress, while the schedule and travel demands of may bring distress. Giving gifts to others and seeing their enjoyment may bring eustress, but the financial burden associated with buying presents could produce distress. Each of these things requires making some minor adjustments to one's life, and thus is considered somewhat stressful.

Exercise:

Problem:

Job burnout tends to be high in people who work in human service jobs. Considering the three dimensions of job burnout, explain how various job aspects unique to being a police officer might lead to job burnout in that line of work.

Solution:

Answers will vary. Many calls that police officers make can be emotionally draining (e.g., tragic deaths, suicides, and children who live in squalid conditions), which might eventually lead to feelings of exhaustion that one can no longer deal with such things. Depersonalization may occur if a police officer works in an environment in which she feels disrespected and unappreciated, which may lead to cynical and callous feelings toward the public. Constant

disrespect from others may diminish a police officer's sense of personal accomplishment.

Glossary

daily hassles

minor irritations and annoyances that are part of our everyday lives and are capable of producing stress

job burnout

general sense of emotional exhaustion and cynicism in relation to one's job; consists of three dimensions: exhaustion, depersonalization, and sense of diminished personal accomplishment

job strain

work situation involving the combination of excessive job demands and workload with little decision making latitude or job control

Social Readjustment Rating Scale (SRRS)

popular scale designed to measure stress; consists of 43 potentially stressful events, each of which has a numerical value quantifying how much readjustment is associated with the event

11.3 Stress and Illness

By the end of this section, you will be able to:

- Explain the nature of psychophysiological disorders
- Describe the immune system and how stress impacts its functioning
- Describe how stress and emotional factors can lead to the development and exacerbation of cardiovascular disorders, asthma, and tension headaches

In this section, we will discuss stress and illness. As stress researcher Robert Sapolsky (1998) describes,

stress-related disease emerges, predominantly, out of the fact that we so often activate a physiological system that has evolved for responding to acute physical emergencies, but we turn it on for months on end, worrying about mortgages, relationships, and promotions. (p. 6)

The stress response, as noted earlier, consists of a coordinated but complex system of physiological reactions that are called upon as needed. These reactions are beneficial at times because they prepare us to deal with potentially dangerous or threatening situations (for example, recall our old friend, the fearsome bear on the trail). However, health is affected when physiological reactions are sustained, as can happen in response to ongoing stress.

PSYCHOPHYSIOLOGICAL DISORDERS

If the reactions that compose the stress response are chronic or if they frequently exceed normal ranges, they can lead to cumulative wear and tear on the body, in much the same way that running your air conditioner on full blast all summer will eventually cause wear and tear on it. For example, the high blood pressure that a person under considerable job strain experiences might eventually take a toll on his heart and set the stage for a heart attack or heart failure. Also, someone exposed to high levels of the stress hormone

cortisol might become vulnerable to infection or disease because of weakened immune system functioning (McEwen, 1998).

Physical disorders or diseases whose symptoms are brought about or worsened by stress and emotional factors are called **psychophysiological disorders**. The physical symptoms of psychophysiological disorders are real and they can be produced or exacerbated by psychological factors (hence the *psycho* and *physiological* in psychophysiological). A list of frequently encountered psychophysiological disorders is provided in [\[link\]](#).

Type of Psychophysiological Disorder	Examples
Cardiovascular	hypertension, coronary heart disease
Gastrointestinal	irritable bowel syndrome
Respiratory	asthma, allergy
Musculoskeletal	low back pain, tension headaches
Skin	acne, eczema, psoriasis

Types of Psychophysiological Disorders (adapted from Everly & Lating, 2002)

In addition to stress itself, emotional upset and certain stressful personality traits have been proposed as potential contributors to ill health. Franz Alexander (1950), an early-20th-century psychoanalyst and physician, once postulated that various diseases are caused by specific unconscious conflicts. For example, he linked hypertension to repressed anger, asthma to

separation anxiety, and ulcers to an unconscious desire to “remain in the dependent infantile situation—to be loved and cared for” (Alexander, 1950, p. 102). Although hypertension does appear to be linked to anger (as you will learn below), Alexander’s assertions have not been supported by research. Years later, Friedman and Booth-Kewley (1987), after statistically reviewing 101 studies examining the link between personality and illness, proposed the existence of disease-prone personality characteristics, including depression, anger/hostility, and anxiety. Indeed, a study of over 61,000 Norwegians identified depression as a risk factor for all major disease-related causes of death (Mykletun et al., 2007). In addition, neuroticism—a personality trait that reflects how anxious, moody, and sad one is—has been identified as a risk factor for chronic health problems and mortality (Ploubidis & Grundy, 2009).

Below, we discuss two kinds of psychophysiological disorders about which a great deal is known: cardiovascular disorders and asthma. First, however, it is necessary to turn our attention to a discussion of the immune system—one of the major pathways through which stress and emotional factors can lead to illness and disease.

STRESS AND THE IMMUNE SYSTEM

In a sense, the **immune system** is the body’s surveillance system. It consists of a variety of structures, cells, and mechanisms that serve to protect the body from invading toxins and microorganisms that can harm or damage the body’s tissues and organs. When the immune system is working as it should, it keeps us healthy and disease free by eliminating bacteria, viruses, and other foreign substances that have entered the body (Everly & Lating, 2002).

Immune System Errors

Sometimes, the immune system will function erroneously. For example, sometimes it can go awry by mistaking your body’s own healthy cells for invaders and repeatedly attacking them. When this happens, the person is

said to have an autoimmune disease, which can affect almost any part of the body. How an autoimmune disease affects a person depends on what part of the body is targeted. For instance, rheumatoid arthritis, an autoimmune disease that affects the joints, results in joint pain, stiffness, and loss of function. Systemic lupus erythematosus, an autoimmune disease that affects the skin, can result in rashes and swelling of the skin. Grave's disease, an autoimmune disease that affects the thyroid gland, can result in fatigue, weight gain, and muscle aches (National Institute of Arthritis and Musculoskeletal and Skin Diseases [NIAMS], 2012).

In addition, the immune system may sometimes break down and be unable to do its job. This situation is referred to as **immunosuppression**, the decreased effectiveness of the immune system. When people experience immunosuppression, they become susceptible to any number of infections, illness, and diseases. For example, acquired immune deficiency syndrome (AIDS) is a serious and lethal disease that is caused by human immunodeficiency virus (HIV), which greatly weakens the immune system by infecting and destroying antibody-producing cells, thus rendering a person vulnerable to any of a number of opportunistic infections (Powell, 1996).

Stressors and Immune Function

The question of whether stress and negative emotional states can influence immune function has captivated researchers for over three decades, and discoveries made over that time have dramatically changed the face of health psychology (Kiecolt-Glaser, 2009). **Psychoneuroimmunology** is the field that studies how psychological factors such as stress influence the immune system and immune functioning. The term psychoneuroimmunology was first coined in 1981, when it appeared as the title of a book that reviewed available evidence for associations between the brain, endocrine system, and immune system (Zacharie, 2009). To a large extent, this field evolved from the discovery that there is a connection between the central nervous system and the immune system.

Some of the most compelling evidence for a connection between the brain and the immune system comes from studies in which researchers demonstrated that immune responses in animals could be classically conditioned (Everly & Lating, 2002). For example, Ader and Cohen (1975) paired flavored water (the conditioned stimulus) with the presentation of an immunosuppressive drug (the unconditioned stimulus), causing sickness (an unconditioned response). Not surprisingly, rats exposed to this pairing developed a conditioned aversion to the flavored water. However, the taste of the water itself later produced immunosuppression (a conditioned response), indicating that the immune system itself had been conditioned. Many subsequent studies over the years have further demonstrated that immune responses can be classically conditioned in both animals and humans (Ader & Cohen, 2001). Thus, if classical conditioning can alter immunity, other psychological factors should be capable of altering it as well.

Hundreds of studies involving tens of thousands of participants have tested many kinds of brief and chronic stressors and their effect on the immune system (e.g., public speaking, medical school examinations, unemployment, marital discord, divorce, death of spouse, burnout and job strain, caring for a relative with Alzheimer's disease, and exposure to the harsh climate of Antarctica). It has been repeatedly demonstrated that many kinds of stressors are associated with poor or weakened immune functioning (Glaser & Kiecolt-Glaser, 2005; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Segerstrom & Miller, 2004).

When evaluating these findings, it is important to remember that there is a tangible physiological connection between the brain and the immune system. For example, the sympathetic nervous system innervates immune organs such as the thymus, bone marrow, spleen, and even lymph nodes (Maier, Watkins, & Fleshner, 1994). Also, we noted earlier that stress hormones released during hypothalamic-pituitary-adrenal (HPA) axis activation can adversely impact immune function. One way they do this is by inhibiting the production of **lymphocytes**, white blood cells that circulate in the body's fluids that are important in the immune response (Everly & Lating, 2002).

Some of the more dramatic examples demonstrating the link between stress and impaired immune function involve studies in which volunteers were exposed to viruses. The rationale behind this research is that because stress weakens the immune system, people with high stress levels should be more likely to develop an illness compared to those under little stress. In one memorable experiment using this method, researchers interviewed 276 healthy volunteers about recent stressful experiences (Cohen et al., 1998). Following the interview, these participants were given nasal drops containing the cold virus (in case you are wondering why anybody would ever want to participate in a study in which they are subjected to such treatment, the participants were paid \$800 for their trouble). When examined later, participants who reported experiencing chronic stressors for more than one month—especially enduring difficulties involving work or relationships—were considerably more likely to have developed colds than were participants who reported no chronic stressors.

In another study, older volunteers were given an influenza virus vaccination. Compared to controls, those who were caring for a spouse with Alzheimer's disease (and thus were under chronic stress) showed poorer antibody response following the vaccination (Kiecolt-Glaser, Glaser, Gravenstein, Malarkey, & Sheridan, 1996).

Other studies have demonstrated that stress slows down wound healing by impairing immune responses important to wound repair (Glaser & Kiecolt-Glaser, 2005). In one study, for example, skin blisters were induced on the forearm. Subjects who reported higher levels of stress produced lower levels of immune proteins necessary for wound healing (Glaser et al., 1999). Stress, then, is not so much the sword that kills the knight, so to speak; rather, it's the sword that breaks the knight's shield, and your immune system is that shield.

CARDIOVASCULAR DISORDERS

The cardiovascular system is composed of the heart and blood circulation system. For many years, disorders that involve the cardiovascular system—known as **cardiovascular disorders**—have been a major focal point in the study of psychophysiological disorders because of the cardiovascular

system's centrality in the stress response (Everly & Lating, 2002). **Heart disease** is one such condition. Each year, heart disease causes approximately one in three deaths in the United States, and it is the leading cause of death in the developed world (Centers for Disease Control and Prevention [CDC], 2011; Shapiro, 2005).

The symptoms of heart disease vary somewhat depending on the specific kind of heart disease one has, but they generally involve angina—chest pains or discomfort that occur when the heart does not receive enough blood (Office on Women's Health, 2009). The pain often feels like the chest is being pressed or squeezed; burning sensations in the chest and shortness of breath are also commonly reported. Such pain and discomfort can spread to the arms, neck, jaws, stomach (as nausea), and back (American Heart Association [AHA], 2012a).

A major risk factor for heart disease is **hypertension**, which is high blood pressure. Hypertension forces a person's heart to pump harder, thus putting more physical strain on the heart. If left unchecked, hypertension can lead to a heart attack, stroke, or heart failure; it can also lead to kidney failure and blindness. Hypertension is a serious cardiovascular disorder, and it is sometimes called the silent killer because it has no symptoms—one who has high blood pressure may not even be aware of it (AHA, 2012b).

Many risk factors contributing to cardiovascular disorders have been identified. These risk factors include social determinants such as aging, income, education, and employment status, as well as behavioral risk factors that include unhealthy diet, tobacco use, physical inactivity, and excessive alcohol consumption; obesity and diabetes are additional risk factors (World Health Organization [WHO], 2013).

Over the past few decades, there has been much greater recognition and awareness of the importance of stress and other psychological factors in cardiovascular health (Nusair, Al-dadah, & Kumar, 2012). Indeed, exposure to stressors of many kinds has also been linked to cardiovascular problems; in the case of hypertension, some of these stressors include job strain (Trudel, Brisson, & Milot, 2010), natural disasters (Saito, Kim, Maekawa, Ikeda, & Yokoyama, 1997), marital conflict (Nealey-Moore, Smith, Uchino, Hawkins, & Olson-Cerny, 2007), and exposure to high traffic noise levels at

one's home (de Kluizenaar, Gansevoort, Miedema, & de Jong, 2007). Perceived discrimination appears to be associated with hypertension among African Americans (Sims et al., 2012). In addition, laboratory-based stress tasks, such as performing mental arithmetic under time pressure, immersing one's hand into ice water (known as the cold pressor test), mirror tracing, and public speaking have all been shown to elevate blood pressure (Phillips, 2011).

ARE YOU TYPE A OR TYPE B?

Sometimes research ideas and theories emerge from seemingly trivial observations. In the 1950s, cardiologist Meyer Friedman was looking over his waiting room furniture, which consisted of upholstered chairs with armrests. Friedman decided to have these chairs reupholstered. When the man doing the reupholstering came to the office to do the work, he commented on how the chairs were worn in a unique manner—the front edges of the cushions were worn down, as were the front tips of the armrests. It seemed like the cardiology patients were tapping or squeezing the front of the armrests, as well as literally sitting on the edge of their seats (Friedman & Rosenman, 1974). Were cardiology patients somehow different than other types of patients? If so, how?

After researching this matter, Friedman and his colleague, Ray Rosenman, came to understand that people who are prone to heart disease tend to think, feel, and act differently than those who are not. These individuals tend to be intensively driven workaholics who are preoccupied with deadlines and always seem to be in a rush. According to Friedman and Rosenman, these individuals exhibit **Type A** behavior pattern; those who are more relaxed and laid-back were characterized as **Type B**. In a sample of Type As and Type Bs, Friedman and Rosenman were startled to discover that heart disease was over seven times more frequent among the Type As than the Type Bs (Friedman & Rosenman, 1959).

The major components of the Type A pattern include an aggressive and chronic struggle to achieve more and more in less and less time (Friedman & Rosenman, 1974). Specific characteristics of the Type A pattern include

an excessive competitive drive, chronic sense of time urgency, impatience, and hostility toward others (particularly those who get in the person's way).

An example of a person who exhibits Type A behavior pattern is Jeffrey. Even as a child, Jeffrey was intense and driven. He excelled at school, was captain of the swim team, and graduated with honors from an Ivy League college. Jeffrey never seems able to relax; he is always working on something, even on the weekends. However, Jeffrey always seems to feel as though there are not enough hours in the day to accomplish all he feels he should. He volunteers to take on extra tasks at work and often brings his work home with him; he often goes to bed angry late at night because he feels that he has not done enough. Jeffrey is quick tempered with his coworkers; he often becomes noticeably agitated when dealing with those coworkers he feels work too slowly or whose work does not meet his standards. He typically reacts with hostility when interrupted at work. He has experienced problems in his marriage over his lack of time spent with family. When caught in traffic during his commute to and from work, Jeffrey incessantly pounds on his horn and swears loudly at other drivers. When Jeffrey was 52, he suffered his first heart attack.

By the 1970s, a majority of practicing cardiologists believed that Type A behavior pattern was a significant risk factor for heart disease (Friedman, 1977). Indeed, a number of early longitudinal investigations demonstrated a link between Type A behavior pattern and later development of heart disease (Rosenman et al., 1975; Haynes, Feinleib, & Kannel, 1980).

Subsequent research examining the association between Type A and heart disease, however, failed to replicate these earlier findings (Glassman, 2007; Myrtek, 2001). Because Type A theory did not pan out as well as they had hoped, researchers shifted their attention toward determining if any of the specific elements of Type A predict heart disease.

Extensive research clearly suggests that the anger/hostility dimension of Type A behavior pattern may be one of the most important factors in the development of heart disease. This relationship was initially described in the Haynes et al. (1980) study mentioned above: Suppressed hostility was found to substantially elevate the risk of heart disease for both men and women. Also, one investigation followed over 1,000 male medical students

from 32 to 48 years. At the beginning of the study, these men completed a questionnaire assessing how they react to pressure; some indicated that they respond with high levels of anger, whereas others indicated that they respond with less anger. Decades later, researchers found that those who earlier had indicated the highest levels of anger were over 6 times more likely than those who indicated less anger to have had a heart attack by age 55, and they were 3.5 times more likely to have experienced heart disease by the same age (Chang, Ford, Meoni, Wang, & Klag, 2002). From a health standpoint, it clearly does not pay to be an angry young person.

After reviewing and statistically summarizing 35 studies from 1983 to 2006, Chida and Steptoe (2009) concluded that the bulk of the evidence suggests that anger and hostility constitute serious long-term risk factors for adverse cardiovascular outcomes among both healthy individuals and those already suffering from heart disease. One reason angry and hostile moods might contribute to cardiovascular diseases is that such moods can create social strain, mainly in the form of antagonistic social encounters with others. This strain could then lay the foundation for disease-promoting cardiovascular responses among hostile individuals (Vella, Kamarck, Flory, & Manuck, 2012). In this transactional model, hostility and social strain form a cycle.

For example, suppose Kaitlin has a hostile disposition; she has a cynical, distrustful attitude toward others and often thinks that other people are out to get her. She is very defensive around people, even those she has known for years, and she is always looking for signs that others are either disrespecting or belittling her. In the shower each morning before work, she often mentally rehearses what she would say to someone who said or did something that angered her, such as making a political statement that was counter to her own ideology. As Kaitlin goes through these mental rehearsals, she often grins and thinks about the retaliation on anyone who will irk her that day.

Socially, she is confrontational and tends to use a harsh tone with people, which often leads to very disagreeable and sometimes argumentative social interactions. As you might imagine, Kaitlin is not especially popular with others, including coworkers, neighbors, and even members of her own

family. They either avoid her at all costs or snap back at her, which causes Kaitlin to become even more cynical and distrustful of others, making her disposition even more hostile. Kaitlin's hostility—through her own doing—has created an antagonistic environment that cyclically causes her to become even more hostile and angry, thereby potentially setting the stage for cardiovascular problems.

In addition to anger and hostility, a number of other negative emotional states have been linked with heart disease, including negative affectivity and depression (Suls & Bunde, 2005). **Negative affectivity** is a tendency to experience distressed emotional states involving anger, contempt, disgust, guilt, fear, and nervousness (Watson, Clark, & Tellegen, 1988). It has been linked with the development of both hypertension and heart disease. For example, over 3,000 initially healthy participants in one study were tracked longitudinally, up to 22 years. Those with higher levels of negative affectivity at the time the study began were substantially more likely to develop and be treated for hypertension during the ensuing years than were those with lower levels of negative affectivity (Jonas & Lando, 2000). In addition, a study of over 10,000 middle-aged London-based civil servants who were followed an average of 12.5 years revealed that those who earlier had scored in the upper third on a test of negative affectivity were 32% more likely to have experienced heart disease, heart attack, or angina over a period of years than were those who scored in the lowest third (Nabi, Kivimaki, De Vogli, Marmot, & Singh-Manoux, 2008). Hence, negative affectivity appears to be a potentially vital risk factor for the development of cardiovascular disorders.

DEPRESSION AND THE HEART

For centuries, poets and folklore have asserted that there is a connection between moods and the heart (Glassman & Shapiro, 1998). You are no doubt familiar with the notion of a broken heart following a disappointing or depressing event and have encountered that notion in songs, films, and literature.

Perhaps the first to recognize the link between depression and heart disease was Benjamin Malzberg (1937), who found that the death rate among

institutionalized patients with melancholia (an archaic term for depression) was six times higher than that of the population. A classic study in the late 1970s looked at over 8,000 manic-depressive persons in Denmark, finding a nearly 50% increase in deaths from heart disease among these patients compared with the general Danish population (Weeke, 1979). By the early 1990s, evidence began to accumulate showing that depressed individuals who were followed for long periods of time were at increased risk for heart disease and cardiac death (Glassman, 2007). In one investigation of over 700 Denmark residents, those with the highest depression scores were 71% more likely to have experienced a heart attack than were those with lower depression scores (Barefoot & Schroll, 1996).

After more than two decades of research, it is now clear that a relationship exists: Patients with heart disease have more depression than the general population, and people with depression are more likely to eventually develop heart disease and experience higher mortality than those who do not have depression (Hare, Toukhsati, Johansson, & Jaarsma, 2013); the more severe the depression, the higher the risk (Glassman, 2007). Consider the following:

- In one study, death rates from cardiovascular problems was substantially higher in depressed people; depressed men were 50% more likely to have died from cardiovascular problems, and depressed women were 70% more likely (Ösby, Brandt, Correia, Ekbom, & Sparén, 2001).
- A statistical review of 10 longitudinal studies involving initially healthy individuals revealed that those with elevated depressive symptoms have, on average, a 64% greater risk of developing heart disease than do those with fewer symptoms (Wulsin & Singal, 2003).
- A study of over 63,000 registered nurses found that those with more depressed symptoms when the study began were 49% more likely to experience fatal heart disease over a 12-year period (Whang et al., 2009).

ASTHMA

Asthma is a chronic and serious disease in which the airways of the respiratory system become obstructed, leading to great difficulty expelling air from the lungs. The airway obstruction is caused by inflammation of the airways (leading to thickening of the airway walls) and a tightening of the muscles around them, resulting in a narrowing of the airways (American Lung Association, 2010). Because airways become obstructed, a person with asthma will sometimes have great difficulty breathing and will experience repeated episodes of wheezing, chest tightness, shortness of breath, and coughing, the latter occurring mostly during the morning and night (CDC, 2006).

According to the Centers for Disease Control and Prevention (CDC), around 4,000 people die each year from asthma-related causes, and asthma is a contributing factor to another 7,000 deaths each year (CDC, 2013a). The CDC has revealed that asthma affects 18.7 million U.S. adults and is more common among people with lower education and income levels (CDC, 2013b). Especially concerning is that asthma is on the rise, with rates of asthma increasing 157% between 2000 and 2010 (CDC, 2013b).

Psychological factors appear to play an important role in asthma (Wright, Rodriguez, & Cohen, 1998), although some believe that psychological factors serve as potential triggers in only a subset of asthma patients (Ritz, Steptoe, Bobb, Harris, & Edwards, 2006). Many studies over the years have demonstrated that some people with asthma will experience asthma-like symptoms if they expect to experience such symptoms, such as when breathing an inert substance that they (falsely) believe will lead to airway obstruction (Sodergren & Hyland, 1999). As stress and emotions directly affect immune and respiratory functions, psychological factors likely serve as one of the most common triggers of asthma exacerbation (Trueba & Ritz, 2013).

TENSION HEADACHES

A headache is a continuous pain anywhere in the head and neck region. Migraine headaches are a type of headache thought to be caused by blood vessel swelling and increased blood flow (McIntosh, 2013). Migraines are characterized by severe pain on one or both sides of the head, an upset

stomach, and disturbed vision. They are more frequently experienced by women than by men (American Academy of Neurology, 2014). Tension headaches are triggered by tightening/tensing of facial and neck muscles; they are the most commonly experienced kind of headache, accounting for about 42% of all headaches worldwide (Stovner et al., 2007). In the United States, well over one-third of the population experiences tension headaches each year, and 2–3% of the population suffers from chronic tension headaches (Schwartz, Stewart, Simon, & Lipton, 1998).

A number of factors can contribute to tension headaches, including sleep deprivation, skipping meals, eye strain, overexertion, muscular tension caused by poor posture, and stress (MedicineNet, 2013). Although there is uncertainty regarding the exact mechanisms through which stress can produce tension headaches, stress has been demonstrated to increase sensitivity to pain (Caceres & Burns, 1997; Logan et al., 2001). In general, tension headache sufferers, compared to non-sufferers, have a lower threshold for and greater sensitivity to pain (Ukestad & Wittrock, 1996), and they report greater levels of subjective stress when faced with a stressor (Myers, Wittrock, & Foreman, 1998). Thus, stress may contribute to tension headaches by increasing pain sensitivity in already-sensitive pain pathways in tension headache sufferers (Cathcart, Petkov, & Pritchard, 2008).

Summary

Psychophysiological disorders are physical diseases that are either brought about or worsened by stress and other emotional factors. One of the mechanisms through which stress and emotional factors can influence the development of these diseases is by adversely affecting the body's immune system. A number of studies have demonstrated that stress weakens the functioning of the immune system. Cardiovascular disorders are serious medical conditions that have been consistently shown to be influenced by stress and negative emotions, such as anger, negative affectivity, and depression. Other psychophysiological disorders that are known to be influenced by stress and emotional factors include asthma and tension headaches.

Review Questions

Exercise:

Problem:

The white blood cells that attack foreign invaders to the body are called _____.

- A. antibodies
- B. telomeres
- C. lymphocytes
- D. immune cells

Solution:

C

Exercise:

Problem:

The risk of heart disease is especially high among individuals with _____.

- A. depression
- B. asthma
- C. telomeres
- D. lymphocytes

Solution:

A

Exercise:

Problem:

The most lethal dimension of Type A behavior pattern seems to be _____.

- A. hostility
- B. impatience
- C. time urgency
- D. competitive drive

Solution:

A

Exercise:

Problem:

Which of the following statements pertaining to asthma is *false*?

- A. Parental and interpersonal conflicts have been tied to the development of asthma.
- B. Asthma sufferers can experience asthma-like symptoms simply by believing that an inert substance they breathe will lead to airway obstruction.
- C. Asthma has been shown to be linked to hostility.
- D. Rates of asthma have decreased considerably since 2000.

Solution:

D

Critical Thinking Questions

Exercise:

Problem:

Discuss the concept of Type A behavior pattern, its history, and what we now know concerning its role in heart disease.

Solution:

Type A was conceptualized as a behavioral style characterized by competitiveness, time urgency, impatience, and anger/hostility. It was later discovered, however, that anger/hostility seems to be the dimension that most clearly predicts heart disease.

Exercise:**Problem:**

Consider the study in which volunteers were given nasal drops containing the cold virus to examine the relationship between stress and immune function (Cohen et al., 1998). How might this finding explain how people seem to become sick during stressful times in their lives (e.g., final exam week)?

Solution:

The results of the study showed that people exposed to the virus were more likely to develop a cold if they had high stress scores. The implication of this finding is that during stressful times, like final exam weeks, the immune system becomes compromised. Thus, it's much easier to get sick during these periods because the immune system is not working at full capacity.

Glossary**asthma**

psychophysiological disorder in which the airways of the respiratory system become obstructed, leading to great difficulty expelling air from the lungs

cardiovascular disorders

disorders that involve the heart and blood circulation system

heart disease

several types of adverse heart conditions, including those that involve the heart's arteries or valves or those involving the inability of the heart to pump enough blood to meet the body's needs; can include heart attack and stroke

hypertension

high blood pressure

immune system

various structures, cells, and mechanisms that protect the body from foreign substances that can damage the body's tissues and organs

immunosuppression

decreased effectiveness of the immune system

lymphocytes

white blood cells that circulate in the body's fluids and are especially important in the body's immune response

negative affectivity

tendency to experience distressed emotional states involving anger, contempt, disgust, guilt, fear, and nervousness

psychoneuroimmunology

field that studies how psychological factors (such as stress) influence the immune system and immune functioning

psychophysiological disorders

physical disorders or diseases in which symptoms are brought about or worsened by stress and emotional factors

Type A

psychological and behavior pattern exhibited by individuals who tend to be extremely competitive, impatient, rushed, and hostile toward

others

Type B

psychological and behavior pattern exhibited by a person who is relaxed and laid back

11.4 Regulation of Stress

By the end of this section, you will be able to:

- Define coping and differentiate between problem-focused and emotion-focused coping
- Describe the importance of perceived control in our reactions to stress
- Explain how social support is vital in health and longevity

As we learned in the previous section, stress—especially if it is chronic—takes a toll on our bodies and can have enormously negative health implications. When we experience events in our lives that we appraise as stressful, it is essential that we use effective coping strategies to manage our stress. **Coping** refers to mental and behavioral efforts that we use to deal with problems relating to stress, including its presumed cause and the unpleasant feelings and emotions it produces.

COPING STYLES

Lazarus and Folkman (1984) distinguished two fundamental kinds of coping: problem-focused coping and emotion-focused coping. In problem-focused coping, one attempts to manage or alter the problem that is causing one to experience stress (i.e., the stressor). Problem-focused coping strategies are similar to strategies used in everyday problem-solving: they typically involve identifying the problem, considering possible solutions, weighing the costs and benefits of these solutions, and then selecting an alternative (Lazarus & Folkman, 1984). As an example, suppose Bradford receives a midterm notice that he is failing statistics class. If Bradford adopts a problem-focused coping approach to managing his stress, he would be proactive in trying to alleviate the source of the stress. He might contact his professor to discuss what must be done to raise his grade, he might also decide to set aside two hours daily to study statistics assignments, and he may seek tutoring assistance. A problem-focused approach to managing stress means we actively try to do things to address the problem.

Emotion-focused coping, in contrast, consists of efforts to change or reduce the negative emotions associated with stress. These efforts may include avoiding, minimizing, or distancing oneself from the problem, or positive

comparisons with others (“I’m not as bad off as she is”), or seeking something positive in a negative event (“Now that I’ve been fired, I can sleep in for a few days”). In some cases, emotion-focused coping strategies involve reappraisal, whereby the stressor is construed differently (and somewhat self-deceptively) without changing its objective level of threat (Lazarus & Folkman, 1984). For example, a person sentenced to federal prison who thinks, “This will give me a great chance to network with others,” is using reappraisal. If Bradford adopted an emotion-focused approach to managing his midterm deficiency stress, he might watch a comedy movie, play video games, or spend hours on Twitter to take his mind off the situation. In a certain sense, emotion-focused coping can be thought of as treating the symptoms rather than the actual cause.

While many stressors elicit both kinds of coping strategies, problem-focused coping is more likely to occur when encountering stressors we perceive as controllable, while emotion-focused coping is more likely to predominate when faced with stressors that we believe we are powerless to change (Folkman & Lazarus, 1980). Clearly, emotion-focused coping is more effective in dealing with uncontrollable stressors. For example, if at midnight you are stressing over a 40-page paper due in the morning that you have not yet started, you are probably better off recognizing the hopelessness of the situation and doing something to take your mind off it; taking a problem-focused approach by trying to accomplish this task would only lead to frustration, anxiety, and even more stress.

Fortunately, most stressors we encounter can be modified and are, to varying degrees, controllable. A person who cannot stand her job can quit and look for work elsewhere; a middle-aged divorcee can find another potential partner; the freshman who fails an exam can study harder next time, and a breast lump does not necessarily mean that one is fated to die of breast cancer.

CONTROL AND STRESS

The desire and ability to predict events, make decisions, and affect outcomes—that is, to enact control in our lives—is a basic tenet of human behavior (Everly & Lating, 2002). Albert Bandura (1997) stated that “the

intensity and chronicity of human stress is governed largely by perceived control over the demands of one's life" (p. 262). As cogently described in his statement, our reaction to potential stressors depends to a large extent on how much control we feel we have over such things. **Perceived control** is our beliefs about our personal capacity to exert influence over and shape outcomes, and it has major implications for our health and happiness (Infurna & Gerstorf, 2014). Extensive research has demonstrated that perceptions of personal control are associated with a variety of favorable outcomes, such as better physical and mental health and greater psychological well-being (Diehl & Hay, 2010). Greater personal control is also associated with lower reactivity to stressors in daily life. For example, researchers in one investigation found that higher levels of perceived control at one point in time were later associated with lower emotional and physical reactivity to interpersonal stressors (Neupert, Almeida, & Charles, 2007). Further, a daily diary study with 34 older widows found that their stress and anxiety levels were significantly reduced on days during which the widows felt greater perceived control (Ong, Bergeman, & Bisconti, 2005).

People who report higher levels of perceived control view their health as controllable, thereby making it more likely that they will better manage their health and engage in behaviors conducive to good health (Bandura, 2004). Not surprisingly, greater perceived control has been linked to lower risk of physical health problems, including declines in physical functioning (Infurna, Gerstorf, Ram, Schupp, & Wagner, 2011), heart attacks (Rosengren et al., 2004), and both cardiovascular disease incidence (Stürmer, Hasselbach, & Amelang, 2006) and mortality from cardiac disease (Surtees et al., 2010). In addition, longitudinal studies of British civil servants have found that those in low-status jobs (e.g., clerical and office support staff) in which the degree of control over the job is minimal are considerably more likely to develop heart disease than those with high-status jobs or considerable control over their jobs (Marmot, Bosma, Hemingway, & Stansfeld, 1997).

The link between perceived control and health may provide an explanation for the frequently observed relationship between social class and health outcomes (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012).

In general, research has found that more affluent individuals experience better health mainly because they tend to believe that they can personally control and manage their reactions to life's stressors (Johnson & Krueger, 2006). Perhaps buoyed by the perceived level of control, individuals of higher social class may be prone to overestimating the degree of influence they have over particular outcomes. For example, those of higher social class tend to believe that their votes have greater sway on election outcomes than do those of lower social class, which may explain higher rates of voting in more affluent communities (Krosnick, 1990). Other research has found that a sense of perceived control can protect less affluent individuals from poorer health, depression, and reduced life-satisfaction—all of which tend to accompany lower social standing (Lachman & Weaver, 1998).

Taken together, findings from these and many other studies clearly suggest that perceptions of control and coping abilities are important in managing and coping with the stressors we encounter throughout life.

SOCIAL SUPPORT

The need to form and maintain strong, stable relationships with others is a powerful, pervasive, and fundamental human motive (Baumeister & Leary, 1995). Building strong interpersonal relationships with others helps us establish a network of close, caring individuals who can provide social support in times of distress, sorrow, and fear. **Social support** can be thought of as the soothing impact of friends, family, and acquaintances (Baron & Kerr, 2003). Social support can take many forms, including advice, guidance, encouragement, acceptance, emotional comfort, and tangible assistance (such as financial help). Thus, other people can be very comforting to us when we are faced with a wide range of life stressors, and they can be extremely helpful in our efforts to manage these challenges. Even in nonhuman animals, species mates can offer social support during times of stress. For example, elephants seem to be able to sense when other elephants are stressed and will often comfort them with physical contact—such as a trunk touch—or an empathetic vocal response (Krumboltz, 2014).

Scientific interest in the importance of social support first emerged in the 1970s when health researchers developed an interest in the health

consequences of being socially integrated (Stroebe & Stroebe, 1996). Interest was further fueled by longitudinal studies showing that social connectedness reduced mortality. In one classic study, nearly 7,000 Alameda County, California, residents were followed over 9 years. Those who had previously indicated that they lacked social and community ties were more likely to die during the follow-up period than those with more extensive social networks. Compared to those with the most social contacts, isolated men and women were, respectively, 2.3 and 2.8 times more likely to die. These trends persisted even after controlling for a variety of health-related variables, such as smoking, alcohol consumption, self-reported health at the beginning of the study, and physical activity (Berkman & Syme, 1979).

Since the time of that study, social support has emerged as one of the well-documented psychosocial factors affecting health outcomes (Uchino, 2009). A statistical review of 148 studies conducted between 1982 and 2007 involving over 300,000 participants concluded that individuals with stronger social relationships have a 50% greater likelihood of survival compared to those with weak or insufficient social relationships (Holt-Lunstad, Smith, & Layton, 2010). According to the researchers, the magnitude of the effect of social support observed in this study is comparable with quitting smoking and exceeded many well-known risk factors for mortality, such as obesity and physical inactivity.

A number of large-scale studies have found that individuals with low levels of social support are at greater risk of mortality, especially from cardiovascular disorders (Brummett et al., 2001). Further, higher levels of social support have been linked to better survival rates following breast cancer (Falagas et al., 2007) and infectious diseases, especially HIV infection (Lee & Rotheram-Borus, 2001). In fact, a person with high levels of social support is less likely to contract a common cold. In one study, 334 participants completed questionnaires assessing their sociability; these individuals were subsequently exposed to a virus that causes a common cold and monitored for several weeks to see who became ill. Results showed that increased sociability was linearly associated with a decreased probability of developing a cold (Cohen, Doyle, Turner, Alper, & Skoner, 2003).

For many of us, friends are a vital source of social support. But what if you found yourself in a situation in which you lacked friends or companions? For example, suppose a popular high school student attends a far-away college, does not know anyone, and has trouble making friends and meaningful connections with others during the first semester. What can be done? If real life social support is lacking, access to distant friends via social media may help compensate. In a study of college freshmen, those with few face-to-face friends on campus but who communicated electronically with distant friends were less distressed than those who did not (Raney & Troop-Gordon, 2012). Also, for some people, our families—especially our parents—are a major source of social support.

Social support appears to work by boosting the immune system, especially among people who are experiencing stress (Uchino, Vaughn, Carlisle, & Birmingham, 2012). In a pioneering study, spouses of cancer patients who reported high levels of social support showed indications of better immune functioning on two out of three immune functioning measures, compared to spouses who were below the median on reported social support (Baron, Cutrona, Hicklin, Russell, & Lubaroff, 1990). Studies of other populations have produced similar results, including those of spousal caregivers of dementia sufferers, medical students, elderly adults, and cancer patients (Cohen & Herbert, 1996; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002).

In addition, social support has been shown to reduce blood pressure for people performing stressful tasks, such as giving a speech or performing mental arithmetic (Lepore, 1998). In these kinds of studies, participants are usually asked to perform a stressful task either alone, with a stranger present (who may be either supportive or unsupportive), or with a friend present. Those tested with a friend present generally exhibit lower blood pressure than those tested alone or with a stranger (Fontana, Diegnan, Villeneuve, & Lepore, 1999). In one study, 112 female participants who performed stressful mental arithmetic exhibited lower blood pressure when they received support from a friend rather than a stranger, but only if the friend was a male (Phillips, Gallagher, & Carroll, 2009). Although these findings are somewhat difficult to interpret, the authors mention that it is

possible that females feel less supported and more evaluated by other females, particularly females whose opinions they value.

Taken together, the findings above suggest one of the reasons social support is connected to favorable health outcomes is because it has several beneficial physiological effects in stressful situations. However, it is also important to consider the possibility that social support may lead to better health behaviors, such as a healthy diet, exercising, smoking cessation, and cooperation with medical regimens (Uchino, 2009).

STRESS REDUCTION TECHNIQUES

Beyond having a sense of control and establishing social support networks, there are numerous other means by which we can manage stress. A common technique people use to combat stress is exercise (Salmon, 2001). It is well-established that exercise, both of long (aerobic) and short (anaerobic) duration, is beneficial for both physical and mental health (Everly & Lating, 2002). There is considerable evidence that physically fit individuals are more resistant to the adverse effects of stress and recover more quickly from stress than less physically fit individuals (Cotton, 1990). In a study of more than 500 Swiss police officers and emergency service personnel, increased physical fitness was associated with reduced stress, and regular exercise was reported to protect against stress-related health problems (Gerber, Kellman, Hartman, & Pühse, 2010).

One reason exercise may be beneficial is because it might buffer some of the deleterious physiological mechanisms of stress. One study found rats that exercised for six weeks showed a decrease in hypothalamic-pituitary-adrenal responsiveness to mild stressors (Campeau et al., 2010). In high-stress humans, exercise has been shown to prevent telomere shortening, which may explain the common observation of a youthful appearance among those who exercise regularly (Puterman et al., 2010). Further, exercise in later adulthood appears to minimize the detrimental effects of stress on the hippocampus and memory (Head, Singh, & Bugg, 2012). Among cancer survivors, exercise has been shown to reduce anxiety (Speck, Courneya, Masse, Duval, & Schmitz, 2010) and depressive

symptoms (Craft, VanIterson, Helenowski, Rademaker, & Courneya, 2012). Clearly, exercise is a highly effective tool for regulating stress.

In the 1970s, Herbert Benson, a cardiologist, developed a stress reduction method called the **relaxation response technique** (Greenberg, 2006). The relaxation response technique combines relaxation with transcendental meditation, and consists of four components (Stein, 2001):

1. sitting upright on a comfortable chair with feet on the ground and body in a relaxed position,
2. a quiet environment with eyes closed,
3. repeating a word or a phrase—a mantra—to oneself, such as “alert mind, calm body,”
4. passively allowing the mind to focus on pleasant thoughts, such as nature or the warmth of your blood nourishing your body.

The relaxation response approach is conceptualized as a general approach to stress reduction that reduces sympathetic arousal, and it has been used effectively to treat people with high blood pressure (Benson & Proctor, 1994).

Another technique to combat stress, **biofeedback**, was developed by Gary Schwartz at Harvard University in the early 1970s. Biofeedback is a technique that uses electronic equipment to accurately measure a person’s neuromuscular and autonomic activity—feedback is provided in the form of visual or auditory signals. The main assumption of this approach is that providing somebody biofeedback will enable the individual to develop strategies that help gain some level of voluntary control over what are normally involuntary bodily processes (Schwartz & Schwartz, 1995). A number of different bodily measures have been used in biofeedback research, including facial muscle movement, brain activity, and skin temperature, and it has been applied successfully with individuals experiencing tension headaches, high blood pressure, asthma, and phobias (Stein, 2001).

Summary

When faced with stress, people must attempt to manage or cope with it. In general, there are two basic forms of coping: problem-focused coping and emotion-focused coping. Those who use problem-focused coping strategies tend to cope better with stress because these strategies address the source of stress rather than the resulting symptoms. To a large extent, perceived control greatly impacts reaction to stressors and is associated with greater physical and mental well-being. Social support has been demonstrated to be a highly effective buffer against the adverse effects of stress. Extensive research has shown that social support has beneficial physiological effects for people, and it seems to influence immune functioning. However, the beneficial effects of social support may be related to its influence on promoting healthy behaviors.

Review Questions

Exercise:

Problem:

Emotion-focused coping would likely be a better method than problem-focused coping for dealing with which of the following stressors?

- A. terminal cancer
- B. poor grades in school
- C. unemployment
- D. divorce

Solution:

A

Exercise:

Problem:

Studies of British civil servants have found that those in the lowest status jobs are much more likely to develop heart disease than those who have high status jobs. These findings attest to the importance of _____ in dealing with stress.

- A. biofeedback
- B. social support
- C. perceived control
- D. emotion-focused coping

Solution:

C

Exercise:**Problem:**

Relative to those with low levels of social support, individuals with high levels of social support _____.

- A. are more likely to develop asthma
- B. tend to have less perceived control
- C. are more likely to develop cardiovascular disorders
- D. tend to tolerate stress well

Solution:

D

Exercise:**Problem:**

The concept of learned helplessness was formulated by Seligman to explain the _____.

- A. inability of dogs to attempt to escape avoidable shocks after having received inescapable shocks
 - B. failure of dogs to learn to from prior mistakes
 - C. ability of dogs to learn to help other dogs escape situations in which they are receiving uncontrollable shocks
 - D. inability of dogs to learn to help other dogs escape situations in which they are receiving uncontrollable electric shocks
-

Solution:

A

Critical Thinking Questions

Exercise:

Problem:

Although problem-focused coping seems to be a more effective strategy when dealing with stressors, do you think there are any kinds of stressful situations in which emotion-focused coping might be a better strategy?

Solution:

Emotion-focused coping would likely be a better coping strategy in situations in which a stressor is uncontrollable, or in which nothing could otherwise be done about it, such as a fatal illness.

Exercise:

Problem:

Describe how social support can affect health both directly and indirectly.

Solution:

Social support seems to have a direct effect on immune system functioning. Social support can affect health indirectly by influencing health-related behaviors, such as exercise and eating properly.

Glossary

biofeedback

stress-reduction technique using electronic equipment to measure a person's involuntary (neuromuscular and autonomic) activity and provide feedback to help the person gain a level of voluntary control over these processes

coping

mental or behavioral efforts used to manage problems relating to stress, including its cause and the unpleasant feelings and emotions it produces

perceived control

peoples' beliefs concerning their capacity to influence and shape outcomes in their lives

relaxation response technique

stress reduction technique combining elements of relaxation and meditation

social support

soothing and often beneficial support of others; can take different forms, such as advice, guidance, encouragement, acceptance, emotional comfort, and tangible assistance

11.5 The Pursuit of Happiness

By the end of this section, you will be able to:

- Define and discuss happiness, including its determinants
- Describe the field of positive psychology and identify the kinds of problems it addresses
- Explain the meaning of positive affect and discuss its importance in health outcomes
- Describe the concept of flow and its relationship to happiness and fulfillment

Although the study of stress and how it affects us physically and psychologically is fascinating, it is—admittedly—somewhat of a grim topic. Psychology is also interested in the study of a more upbeat and encouraging approach to human affairs—the quest for happiness.

HAPPINESS

America's founders declared that its citizens have an unalienable right to pursue happiness. But what is happiness? When asked to define the term, people emphasize different aspects of this elusive state. Indeed, happiness is somewhat ambiguous and can be defined from different perspectives (Martin, 2012). Some people, especially those who are highly committed to their religious faith, view happiness in ways that emphasize virtuosity, reverence, and enlightened spirituality. Others see happiness as primarily contentment—the inner peace and joy that come from deep satisfaction with one's surroundings, relationships with others, accomplishments, and oneself. Still others view happiness mainly as pleasurable engagement with their personal environment—having a career and hobbies that are engaging, meaningful, rewarding, and exciting. These differences, of course, are merely differences in emphasis. Most people would probably agree that each of these views, in some respects, captures the essence of happiness.

Elements of Happiness

Some psychologists have suggested that happiness consists of three distinct elements: the pleasant life, the good life, and the meaningful life (Seligman, 2002; Seligman, Steen, Park, & Peterson, 2005). The pleasant life is realized through the attainment of day-to-day pleasures that add fun, joy, and excitement to our lives. For example, evening walks along the beach and a fulfilling sex life can enhance our daily pleasure and contribute to the pleasant life. The good life is achieved through identifying our unique skills and abilities and engaging these talents to enrich our lives; those who achieve the good life often find themselves absorbed in their work or their recreational pursuits. The meaningful life involves a deep sense of fulfillment that comes from using our talents in the service of the greater good: in ways that benefit the lives of others or that make the world a better place. In general, the happiest people tend to be those who pursue the full life—they orient their pursuits toward all three elements (Seligman et al., 2005).

For practical purposes, a precise definition of **happiness** might incorporate each of these elements: an enduring state of mind consisting of joy, contentment, and other positive emotions, plus the sense that one's life has meaning and value (Lyubomirsky, 2001). The definition implies that happiness is a long-term state—what is often characterized as subjective well-being—rather than merely a transient positive mood we all experience from time to time. It is this enduring happiness that has captured the interests of psychologists and other social scientists.

The study of happiness has grown dramatically in the last three decades (Diener, 2013). One of the most basic questions that happiness investigators routinely examine is this: How happy are people in general? The average person in the world tends to be relatively happy and tends to indicate experiencing more positive feelings than negative feelings (Diener, Ng, Harter, & Arora, 2010). When asked to evaluate their current lives on a scale ranging from 0 to 10 (with 0 representing “worst possible life” and 10 representing “best possible life”), people in more than 150 countries surveyed from 2010–2012 reported an average score of 5.2. People who live in North America, Australia, and New Zealand reported the highest average score at 7.1, whereas those living Sub-Saharan Africa reported the lowest average score at 4.6 (Helliwell, Layard, & Sachs, 2013). Worldwide,

the five happiest countries are Denmark, Norway, Switzerland, the Netherlands, and Sweden; the United States is ranked 17th happiest.

Several years ago, a Gallup survey of more than 1,000 U.S. adults found that 52% reported that they were “very happy.” In addition, more than 8 in 10 indicated that they were “very satisfied” with their lives (Carroll, 2007). However, a recent poll of 2,345 U.S. adults surprisingly revealed that only one-third reported they are “very happy.” The poll also revealed that the happiness levels of certain groups, including minorities, recent college graduates, and the disabled, have trended downward in recent years (Gregoire, 2013). Although it is difficult to explain this apparent decline in happiness, it may be connected to the challenging economic conditions the United States has endured over the last several years. Of course, this presumption would imply that happiness is closely tied to one’s finances. But, is it? This question brings us to the next important issue: What factors influence happiness?

Factors Connected to Happiness

What really makes people happy? What factors contribute to sustained joy and contentment? Is it money, attractiveness, material possessions, a rewarding occupation, a satisfying relationship? Extensive research over the years has examined this question. One finding is that age is related to happiness: Life satisfaction usually increases the older people get, but there do not appear to be gender differences in happiness (Diener, Suh, Lucas, & Smith, 1999). Although it is important to point out that much of this work has been correlational, many of the key findings (some of which may surprise you) are summarized below.

Family and other social relationships appear to be key factors correlated with happiness. Studies show that married people report being happier than those who are single, divorced, or widowed (Diener et al., 1999). Happy individuals also report that their marriages are fulfilling (Lyubomirsky, King, & Diener, 2005). In fact, some have suggested that satisfaction with marriage and family life is the strongest predictor of happiness (Myers, 2000). Happy people tend to have more friends, more high-quality social

relationships, and stronger social support networks than less happy people (Lyubomirsky et al., 2005). Happy people also have a high frequency of contact with friends (Pinquart & Sörensen, 2000).

Can money buy happiness? In general, extensive research suggests that the answer is yes, but with several caveats. While a nation's per capita gross domestic product (GDP) is associated with happiness levels (Helliwell et al., 2013), changes in GDP (which is a less certain index of household income) bear little relationship to changes in happiness (Diener, Tay, & Oishi, 2013). On the whole, residents of affluent countries tend to be happier than residents of poor countries; within countries, wealthy individuals are happier than poor individuals, but the association is much weaker (Diener & Biswas-Diener, 2002). To the extent that it leads to increases in purchasing power, increases in income are associated with increases in happiness (Diener, Oishi, & Ryan, 2013). However, income within societies appears to correlate with happiness only up to a point. In a study of over 450,000 U.S. residents surveyed by the Gallup Organization, Kahneman and Deaton (2010) found that well-being rises with annual income, but only up to \$75,000. The average increase in reported well-being for people with incomes greater than \$75,000 was null. As implausible as these findings might seem—after all, higher incomes would enable people to indulge in Hawaiian vacations, prime seats at sporting events, expensive automobiles, and expansive new homes—higher incomes may impair people's ability to savor and enjoy the small pleasures of life (Kahneman, 2011). Indeed, researchers in one study found that participants exposed to a subliminal reminder of wealth spent less time savoring a chocolate candy bar and exhibited less enjoyment of this experience than did participants who were not reminded of wealth (Quoidbach, Dunn, Petrides, & Mikolajczak, 2010).

What about education and employment? Happy people, compared to those who are less happy, are more likely to graduate from college and secure more meaningful and engaging jobs. Once they obtain a job, they are also more likely to succeed (Lyubomirsky et al., 2005). While education shows a positive (but weak) correlation with happiness, intelligence is not appreciably related to happiness (Diener et al., 1999).

Does religiosity correlate with happiness? In general, the answer is yes (Hackney & Sanders, 2003). However, the relationship between religiosity and happiness depends on societal circumstances. Nations and states with more difficult living conditions (e.g., widespread hunger and low life expectancy) tend to be more highly religious than societies with more favorable living conditions. Among those who live in nations with difficult living conditions, religiosity is associated with greater well-being; in nations with more favorable living conditions, religious and nonreligious individuals report similar levels of well-being (Diener, Tay, & Myers, 2011).

Clearly the living conditions of one's nation can influence factors related to happiness. What about the influence of one's culture? To the extent that people possess characteristics that are highly valued by their culture, they tend to be happier (Diener, 2012). For example, self-esteem is a stronger predictor of life satisfaction in individualistic cultures than in collectivistic cultures (Diener, Diener, & Diener, 1995), and extraverted people tend to be happier in extraverted cultures than in introverted cultures (Fulmer et al., 2010).

So we've identified many factors that exhibit some correlation to happiness. What factors don't show a correlation? Researchers have studied both parenthood and physical attractiveness as potential contributors to happiness, but no link has been identified. Although people tend to believe that parenthood is central to a meaningful and fulfilling life, aggregate findings from a range of countries indicate that people who do not have children are generally happier than those who do (Hansen, 2012). And although one's perceived level of attractiveness seems to predict happiness, a person's objective physical attractiveness is only weakly correlated with her happiness (Diener, Wolsic, & Fujita, 1995).

Life Events and Happiness

An important point should be considered regarding happiness. People are often poor at affective forecasting: predicting the intensity and duration of their future emotions (Wilson & Gilbert, 2003). In one study, nearly all

newlywed spouses predicted their marital satisfaction would remain stable or improve over the following four years; despite this high level of initial optimism, their marital satisfaction actually declined during this period (Lavner, Karner, & Bradbury, 2013). In addition, we are often incorrect when estimating how our long-term happiness would change for the better or worse in response to certain life events. For example, it is easy for many of us to imagine how euphoric we would feel if we won the lottery, were asked on a date by an attractive celebrity, or were offered our dream job. It is also easy to understand how long-suffering fans of the Chicago Cubs baseball team, which has not won a World Series championship since 1908, think they would feel permanently elated if their team would finally win another World Series. Likewise, it is easy to predict that we would feel permanently miserable if we suffered a crippling accident or if a romantic relationship ended.

However, something similar to sensory adaptation often occurs when people experience emotional reactions to life events. In much the same way our senses adapt to changes in stimulation (e.g., our eyes adapting to bright light after walking out of the darkness of a movie theater into the bright afternoon sun), we eventually adapt to changing emotional circumstances in our lives (Brickman & Campbell, 1971; Helson, 1964). When an event that provokes positive or negative emotions occurs, at first we tend to experience its emotional impact at full intensity. We feel a burst of pleasure following such things as a marriage proposal, birth of a child, acceptance to law school, an inheritance, and the like; as you might imagine, lottery winners experience a surge of happiness after hitting the jackpot (Lutter, 2007). Likewise, we experience a surge of misery following widowhood, a divorce, or a layoff from work. In the long run, however, we eventually adjust to the emotional new normal; the emotional impact of the event tends to erode, and we eventually revert to our original baseline happiness levels. Thus, what was at first a thrilling lottery windfall or World Series championship eventually loses its luster and becomes the status quo. Indeed, dramatic life events have much less long-lasting impact on happiness than might be expected (Brickman, Coats, & Janoff-Bulman, 1978).

Summary

Happiness is conceptualized as an enduring state of mind that consists of the capacity to experience pleasure in daily life, as well as the ability to engage one's skills and talents to enrich one's life and the lives of others. Although people around the world generally report that they are happy, there are differences in average happiness levels across nations. Although people have a tendency to overestimate the extent to which their happiness set points would change for the better or for the worse following certain life events, researchers have identified a number of factors that are consistently related to happiness. In recent years, positive psychology has emerged as an area of study seeking to identify and promote qualities that lead to greater happiness and fulfillment in our lives. These components include positive affect, optimism, and flow.

Review Questions

Exercise:

Problem:

Which of the following is *not* one of the presumed components of happiness?

- A. using our talents to help improve the lives of others
- B. learning new skills
- C. regular pleasurable experiences
- D. identifying and using our talents to enrich our lives

Solution:

B

Exercise:

Problem:

Researchers have identified a number of factors that are related to happiness. Which of the following is *not* one of them?

- A. age
 - B. annual income up to \$75,000
 - C. physical attractiveness
 - D. marriage
-

Solution:

C

Exercise:

Problem: How does positive affect differ from optimism?

- A. Optimism is more scientific than positive affect.
 - B. Positive affect is more scientific than optimism.
 - C. Positive affect involves feeling states, whereas optimism involves expectations.
 - D. Optimism involves feeling states, whereas positive affect involves expectations.
-

Solution:

C

Exercise:

Problem:

Carson enjoys writing mystery novels, and has even managed to publish some of his work. When he's writing, Carson becomes extremely focused on his work; in fact, he becomes so absorbed that that he often loses track of time, often staying up well past 3 a.m. Carson's experience best illustrates the concept of _____.

- A. happiness set point
- B. adaptation
- C. positive affect

D. flow

Solution:

D

Critical Thinking Questions

Exercise:

Problem:

In considering the three dimensions of happiness discussed in this section (the pleasant life, the good life, and the meaningful life), what are some steps you could take to improve your personal level of happiness?

Solution:

Answers will vary, but may include mentioning things that boost positive emotions (the pleasant life), developing and using skills and talents (the good life), and using one's talents to help others (the meaningful life).

Exercise:

Problem:

The day before the drawing of a \$300 million Powerball lottery, you notice that a line of people waiting to buy their Powerball tickets is stretched outside the door of a nearby convenience store. Based on what you've learned, provide some perspective on why these people are doing this, and what would likely happen if one of these individuals happened to pick the right numbers.

Solution:

These individuals' affective forecasting is such that they believe their lives would be immeasurably happier if they won the lottery. Although winning would certainly lead to a surge of euphoria in the short term, long term they would likely adjust, and their happiness levels would likely return to normal. This fact is lost on most people, especially when considering the intensity and duration of their emotions following a major life event.

Glossary

flow

state involving intense engagement in an activity; usually is experienced when participating in creative, work, and leisure endeavors

happiness

enduring state of mind consisting of joy, contentment, and other positive emotions; the sense that one's life has meaning and value

optimism

tendency toward a positive outlook and positive expectations

positive affect

state or a trait that involves pleasurable engagement with the environment, the dimensions of which include happiness, joy, enthusiasm, alertness, and excitement

positive psychology

scientific area of study seeking to identify and promote those qualities that lead to happy, fulfilled, and contented lives